# FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

**May 20 to June 2, 2012 (Weeks 21 & 22)**

## Overall Influenza Summary

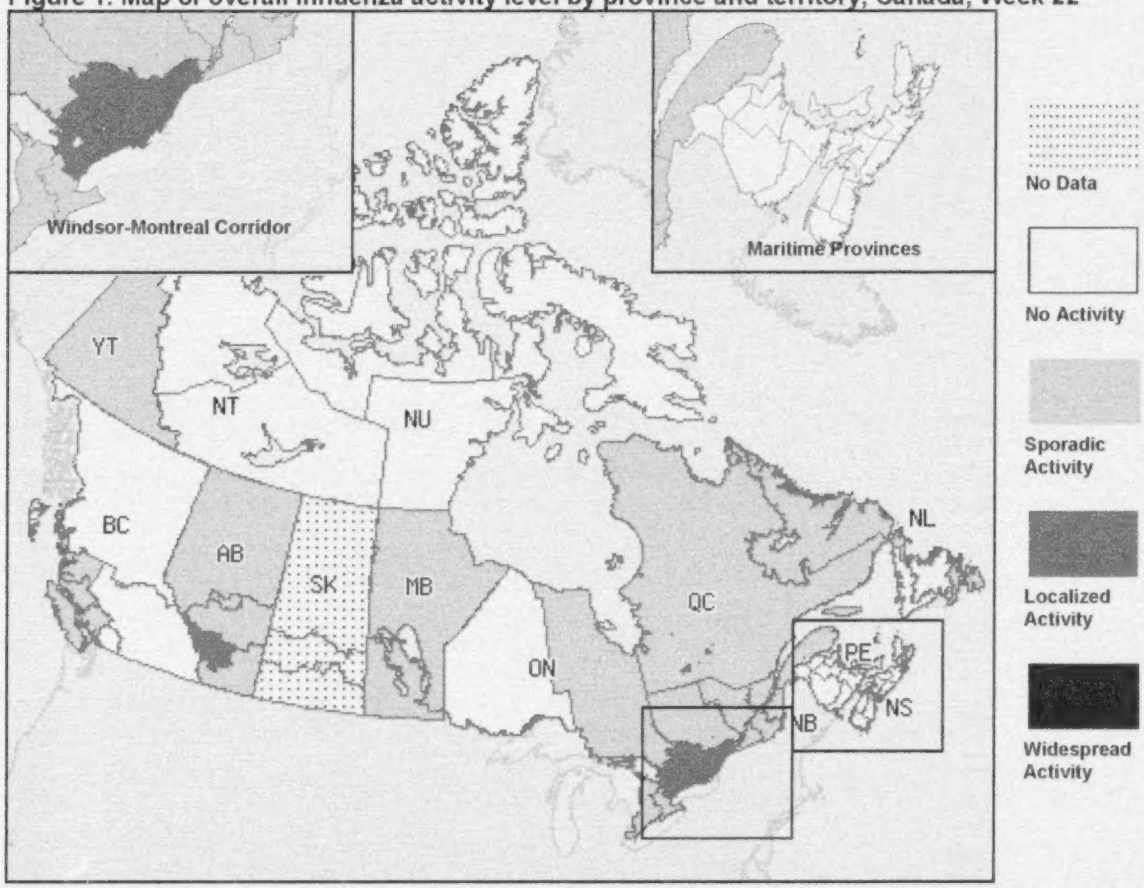
- Overall, influenza activity in Canada is low and continues to decline. Reports of localized influenza activity were still reported in regions in Ontario & Quebec (week 21) and Ontario and Alberta (week 22).
- Two outbreaks of influenza were reported over the 2-week period (1 in a LTCF and 1 in a school).
- In weeks 21 and 22, a total of 273 laboratory detections of influenza were reported of which 32% were for influenza A viruses (42.0% - A(H3); 19.3% - A(H1N1)pdm09; 38.6% - unsubtyped) and 68% for influenza B viruses.
- Thirty-nine influenza-associated hospitalizations were reported over the two-week period (14 paediatric through IMPACT surveillance and 25 adult through aggregate surveillance)
- The ILI consultation rates continued to decline over the 2-week period and were within expected levels for this time of year.

**NOTE:** Bi-weekly reports will continue until October 12, 2012. However, laboratory detections reported through the RVDSS and influenza activity level maps will be updated weekly on the FluWatch website.

## Influenza Activity (geographic spread) and Outbreaks

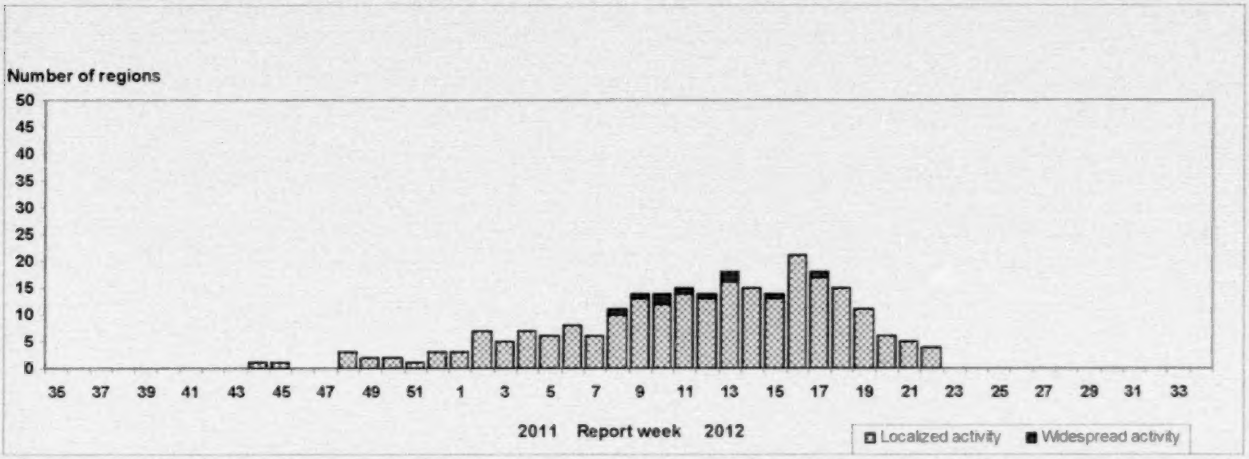
In week 21, 5 surveillance regions (within ON & QC) reported localized activity and 20 regions (within BC, AB, ON, QC, NB, NL & YT) reported sporadic influenza activity. In week 22, 4 regions (within AB & ON) reported localized activity and 20 regions (within BC, AB, MB, ON, QC, NL & YT) reported sporadic influenza activity (see Figure 1). One new long-term care facility outbreak due to influenza A(H3N2) was reported in QC in week 21 and an outbreak of influenza B was reported in a school in AB in week 22 (Figure 3).

**Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 22**



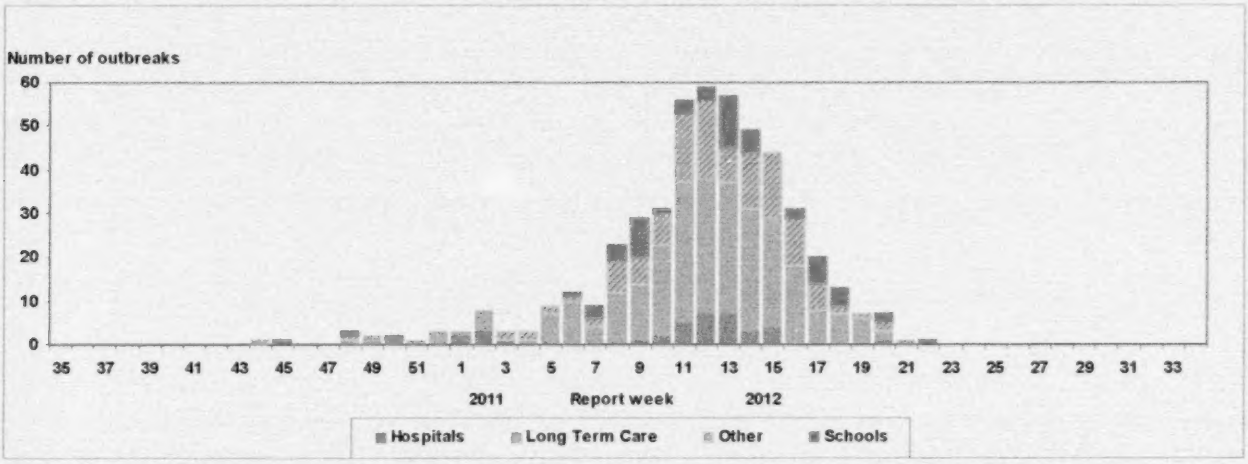

Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

**Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2011-2012 (N=56)**




† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

**Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2011-2012**




## Influenza and Other Respiratory Virus Detections

The proportion of positive influenza tests continued to decline and was 7.0% (151/2,144) in week 21 and 6.5% (122/1,886) in week 22 (Figure 4 & 5). The proportion of positive detections for influenza A viruses in week 22 (2.5%) increased slightly from week 21 (1.9%) while the percent positive for influenza B viruses continued to decline (was 5.1% in week 21 and 4.0% in week 22).

Cumulative to date of influenza virus detections by type/subtype is as follows: 46.5% influenza A (40.9% - A(H3); 18.9% - A(H1N1)pdm09; 40.2% - unsubtyped) and 53.5% influenza B (Table 1).

Detailed information on age and type/subtype were received on 10,143 cases to date this season (Table 2). The proportions of cases by age group are as follows: 20.5% were < 5 years; 18.2% were between 5-19 years; 21.9% were between 20-44 years; 15.5% were between 45-64 years of age; 23.5% were >= 65 years; and 0.2% with age unknown. The largest proportion of influenza A cases were between 20-44 years of age (26%) and those >=65 years of age (25%). The largest proportion of influenza B cases were in those under 20 years of age (46%) and those >=65 years of age (22%).

The percentage positive for rhinovirus detections declined slightly compared to the previous week (14.3% in week 22) but generally has been increasing since April; the percentage positive for rhinoviruses remain the highest compared to the other respiratory viruses. The percentage positive for parainfluenza viruses has been increasing gradually since mid-April and was 5.8% in week 22. The percentage positive for the other respiratory viruses remained low in week 22 and declined compared to the previous week : RSV-3.5%; adenovirus-1.4%; hMPV-0.8%; and coronavirus-1.0% (Figure 5). For more details, see the weekly Respiratory Virus Detections in Canada Report.

**Table 1. Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2011-2012**

| Reporting provinces | May 20 to June 2, 2012 | | | | | | Cumulative (August 28, 2011 to June 2, 2012) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Influenza A | | | | | B | Influenza A | | | | | B |
| | A Total | A(H1) | A(H3) | Pand H1N1 | A (UnS)* | Total | A Total | A(H1) | A(H3) | Pand H1N1 | A (UnS)* | Total |
| BC | 40 | 0 | 29 | 7 | 4 | 24 | 625 | 0 | 500 | 104 | 21 | 143 |
| AB | 8 | 0 | 4 | 3 | 1 | 37 | 1335 | 0 | 1023 | 258 | 54 | 278 |
| SK | 4 | 0 | 0 | 2 | 2 | 12 | 519 | 0 | 319 | 50 | 150 | 91 |
| MB | 1 | 0 | 0 | 1 | 0 | 7 | 74 | 0 | 12 | 8 | 54 | 244 |
| ON | 8 | 0 | 2 | 2 | 4 | 46 | 948 | 0 | 256 | 491 | 201 | 2749 |
| QC | 12 | 0 | 2 | 0 | 10 | 55 | 1847 | 0 | 73 | 97 | 1677 | 2242 |
| NB | 2 | 0 | 0 | 2 | 0 | 3 | 103 | 0 | 32 | 36 | 35 | 334 |
| NS | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 11 | 1 | 4 | 93 |
| PE | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 51 |
| NL | 13 | 0 | 0 | 0 | 13 | 1 | 117 | 0 | 56 | 10 | 51 | 212 |
| **Canada** | **88** | **0** | **37** | **17** | **34** | **185** | **5587** | **0** | **2284** | **1056** | **2247** | **6437** |

*Unsubtyped: The specimen was typed as influenza A, but no test for subtyping was performed. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

**Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2011-2012***

| Age groups | Weekly (May 20 to June 2, 2012) | | | | | Cumulative (Aug. 28, 2011 to June 2, 2012) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Influenza A | | | | B | Influenza A | | | | B |
| | A Total | Pandemic H1N1 | A/H3N2 | A unsubtyped | Total | A Total | Pandemic H1N1 | A/H3N2 | A unsubtyped | Total |
| <5 | 0 | 0 | 0 | 0 | 11 | 989 | 232 | 344 | 413 | 1090 |
| 5-19 | 4 | 2 | 1 | 1 | 9 | 565 | 86 | 284 | 195 | 1286 |
| 20-44 | 4 | 2 | 2 | 0 | 9 | 1285 | 290 | 467 | 528 | 941 |
| 45-64 | 0 | 0 | 0 | 0 | 2 | 890 | 185 | 305 | 400 | 687 |
| 65+ | 1 | 0 | 1 | 0 | 9 | 1260 | 70 | 749 | 441 | 1125 |
| Unknown | 0 | 0 | 0 | 0 | 0 | 21 | 6 | 14 | 1 | 4 |
| Total | 9 | 4 | 4 | 1 | 40 | 5010 | 869 | 2163 | 1978 | 5133 |

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

**Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2011-2012**

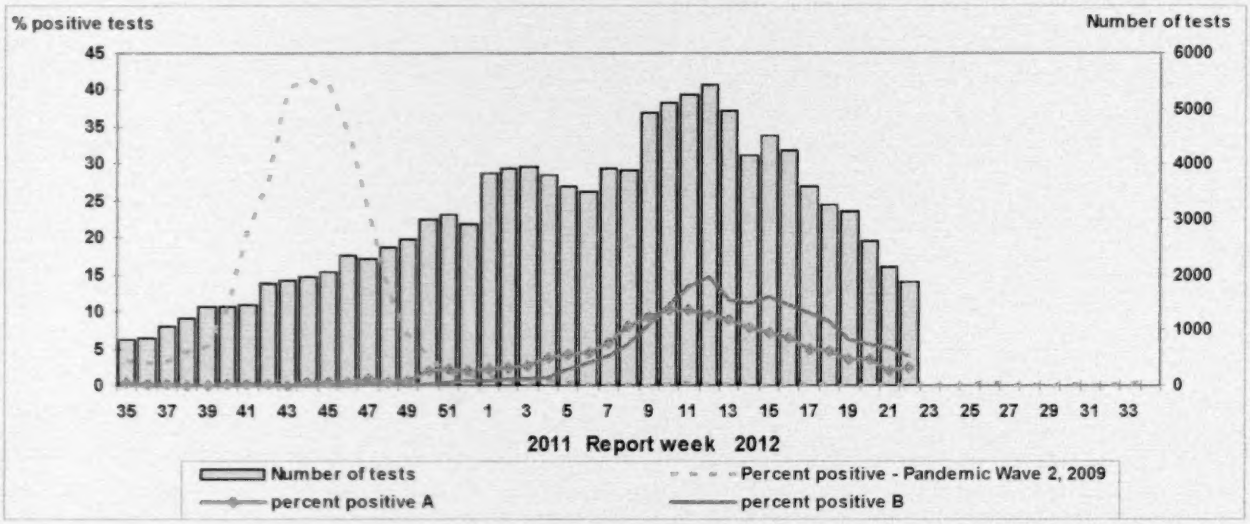
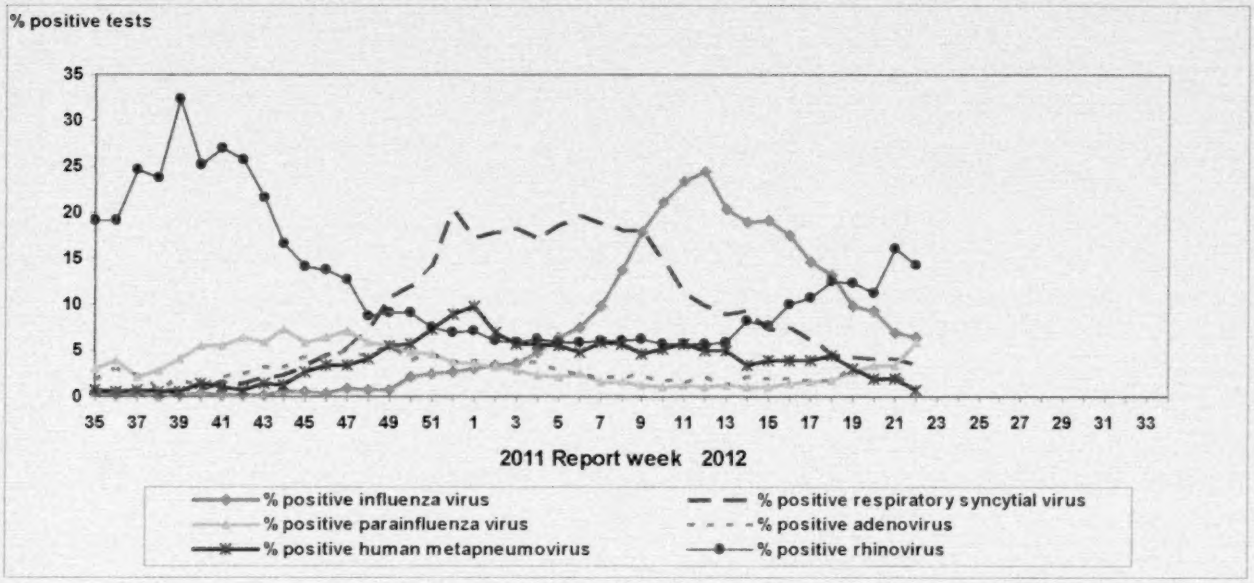


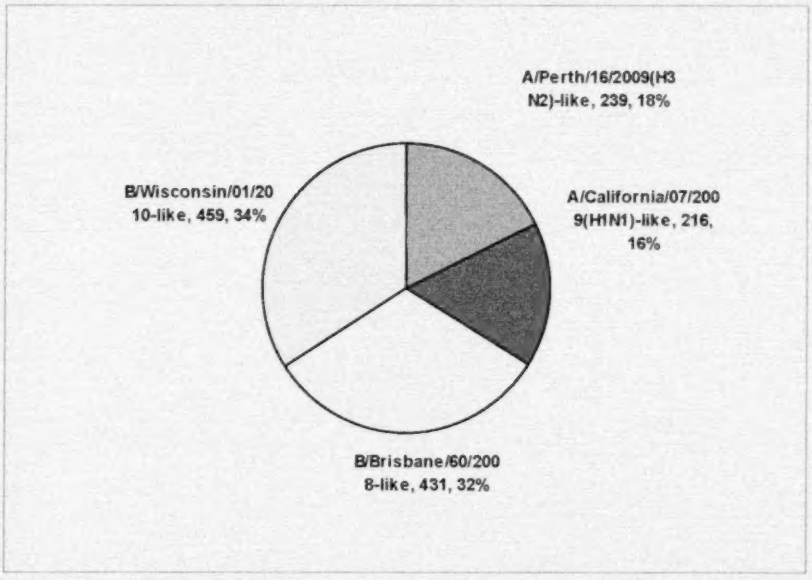
**Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2011-2012**




## Influenza Strain Characterizations

Since the start of the season, the National Microbiology Laboratory (NML) has antigenically characterized 1,345 influenza viruses (239 A/H3N2, 216 A/H1N1 and 890 B). Of the 239 A/H3N2 viruses (from BC, AB, SK, MB, ON, QC, NB, NS & NT), 91.6% (219) were antigenically similar to A/Perth/16/2009 while 8.4% (20) viruses showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 216 A/H1N1 viruses characterized (from BC, AB, SK, MB, ON, QC & NB), 97.7% (211) were antigenically similar to A/California/07/2009 and 2.3% (5) viruses tested showed reduced titer with antiserum produced against A/California/07/2009. Of the 890 influenza B viruses characterized, 48.4% (431) (from BC, AB, SK, MB, ON, QC, NB, NS & NL) were antigenically similar to the vaccine strain B/Brisbane/60/2008 (Victoria lineage); however 1 virus out of the 431 tested showed reduced titer with antiserum produced against B/Brisbane/60/2008. The remaining 51.6% (459) of the influenza B viruses (from BC, AB, SK, MB, ON, QC, NB, NS, NT & NU) are antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage. (Figure 6)

**Figure 6. Influenza strain characterizations, Canada, 2011-2012, N = 1,345**




Note: The recommended components for the 2011-2012 Northern Hemisphere influenza vaccine include: A/Perth/16/2009 (H3N2), A/California/7/2009 (H1N1) and B/Brisbane/60/2008.

## Antiviral Resistance

Since the beginning of the season, NML has tested 1,371 influenza viruses for resistance to oseltamivir (by phenotypic assay and/or sequencing) and 1,369 for zanamivir (by phenotypic assay) and it was found that all viruses tested were susceptible to oseltamivir and zanamivir. A total of 746 influenza A viruses (403 H3N2 and 343 H1N1) were tested for amantadine resistance; all but 1 influenza A(H3N2) virus tested were resistant. (Table 3)

**Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2011-2012**

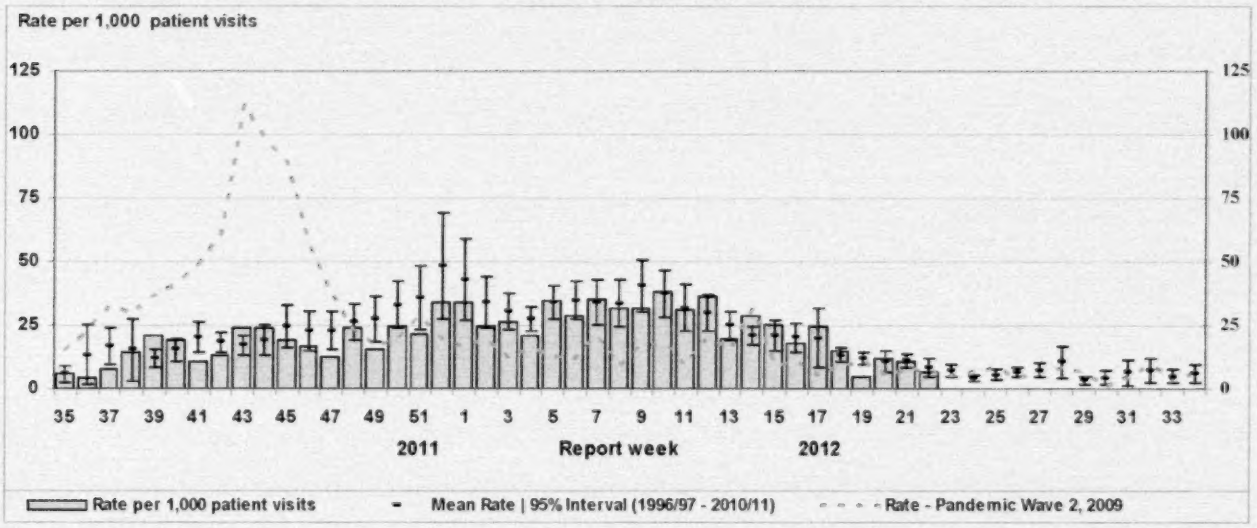
| Virus type and subtype | Oseltamivir | | Zanamivir | | Amantadine | |
|---|---|---|---|---|---|---|
| | # tested | # resistant (%) | # tested | # resistant (%) | # tested | # resistant (%) |
| A (H3N2) | 234 | 0 | 232 | 0 | 403 | 402 (99.8%) |
| A (H1N1) | 249 | 0 | 249 | 0 | 343 | 343 (100%) |
| B | 888 | 0 | 888 | 0 | NA* | NA* |
| TOTAL | 1371 | 0 | 1369 | 0 | 746 | 745 (99.9%) |

* NA – not applicable

## Influenza-like Illness (ILI) Consultation Rate

The national ILI consultation rate continued to decline over the past two weeks and was 10.9 ILI consultations per 1,000 patient visits in week 21 and 6.5/1,000 visits in week 22 (Figure 7). The rates observed in both weeks were within expected levels for this time of year. The highest consultation rate in week 21 was observed in those between 5 to 19 years old (29.0/1,000 visits); and in those between 20 to 64 years old (7.9/1,000 visits) in week 22.

**Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2011-2012 compared to 1996/97 through to 2010/11 seasons (with pandemic data suppressed)**




Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

## Severe Respiratory Illness Surveillance

### Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In weeks 21 and 22, a total of 14 (9 in week 21 and 5 in week 22) new laboratory-confirmed influenza-associated paediatric (16 years of age and under) hospitalizations were reported through the Immunization Monitoring Program Active (IMPACT) network. One hospitalization was due to influenza A(H3N2) (in AB) and 13 were due to influenza B (in AB, SK, ON & QC).

To date this season, 582 influenza-associated paediatric hospitalizations have been reported through IMPACT (from BC, AB, SK, MB, ON, QC, NS & NL); 42.1% (245) were due to influenza A and 57.9% (337) were due to influenza B. The proportion of cases by age group is as follows: 14.3% among infants <6 months of age; 20.6% among children 6-23 months of age; 29.7% were between 2-4 years; 24.9% were between 5-9 years; and 10.5% were between 10-16 years. To date this season, 5 influenza-associated paediatric deaths have been reported through the IMPACT network; all associated with influenza B infection.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associate paediatric hospitalizations in Canada; therefore, the number of hospitalizations included in this report may differ from those reported by other Provincial and Territorial Health Authorities.

**Influenza Hospitalizations and Deaths (Aggregate Surveillance System)**
In weeks 21 and 22, a total of 42 (40 in week 21 and 2 in week 22) new laboratory-confirmed influenza-associated hospitalizations were reported of which 40.5% (17) were in those < 20 years of age and 59.5% (25) in those ≥ 20 years of age; 38.1% were due to influenza A and 61.9% due to influenza B. The hospitalizations were reported from AB (8), MB (2), ON (27), NL (4) and YT (1). Of the 42 hospitalizations, 2 required admission to ICU and were associated with influenza A (in NL) and influenza B (in AB) infections. In week 21, 3 influenza-associated deaths were reported (ON); all were associated with influenza B infection and were ≥ 65 years of age.

To date this season, 1,777 influenza-associated hospitalizations have been reported from 7 provinces (AB, SK, MB, ON, NS, PE & NL) and 2 territories (YT & NT); 39.3% (698) were in those < 20 years of age, 60.7% (1,078) in those ≥ 20 years of age, and 0.1% (1) of unknown age. The largest proportion of cases was observed in those ≥ 65 years of age (33.5%). Influenza B (56.6%) continues to be the predominant influenza type among hospitalized cases compared to influenza A; of the influenza A hospitalizations where subtype was available, influenza A(H3N2) predominated (60.5%). There have been 74 hospitalizations requiring ICU admission reported (from AB, SK, MB, NS & NL) of which 28.4% were in those < 20 years of age and 71.6% were in those ≥ 20 years of age. To date this season, 94 influenza-associated deaths have been reported (from AB, SK, MB, ON & NS) of which 1.1% were of unknown age, 7.4% were among those < 20 years of age and 91.5% in those ≥ 20 years of age. Of the adult deaths, 74.5% were in those ≥ 65 years of age.

Note: Some of the hospitalizations and deaths reported in those ≤ 16 years of age may also have been reported in the IMPACT summary above if the hospitalization or death occurred in one of the 12 IMPACT hospitals. The reason for hospitalization or cause of death does not have to be attributable to influenza in order to be reported. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces: BC, & QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not reported in ON.

## International Influenza Updates

**WHO:** Worldwide influenza activity is generally low. Influenza activity in the northern hemisphere temperate regions is continuing to decline or back to baseline levels indicating the season is ending. Influenza activity in tropical areas of the world is low with the exception of China Hong Kong Special Administrative Region and Madagascar where influenza A(H3N2) is the predominant virus circulating. Influenza activity in the temperate zone of the southern hemisphere is still low (except in Chile and Paraguay where increasing ILI was reported in the past several weeks). *World Health Organization influenza update*

**United States:** The proportion of tests positive for influenza viruses declined compared to the previous week and was 11.8% in week 21. Of the positive influenza detections reported between May 6 to May 26, 2012, the majority (53%) were positive for influenza A viruses. Of the influenza A viruses for which subtype information was available, the large majority (83%) were influenza A(H3) viruses. All other indicators of influenza activity remained low. *Centers for Disease Control and Prevention seasonal influenza report*

**Europe:** Influenza activity is at out-of-season levels throughout the European Region. In week 22, only 1.9% (2/108) of the samples collected from sentinel sources was positive for influenza virus; from non-sentinel sources, only 56 samples were influenza-positive, indicating low influenza activity in the Region. Consultation rates for influenza-like illness (ILI) and acute respiratory infection (ARI) are now at low levels in all countries in the Region. *EuroFlu weekly electronic bulletin*

## Human Avian Influenza Updates

Three new cases of human avian influenza A/H5N1 infection were reported by the WHO between May 29 and June 7, 2012 from Cambodia, China and Egypt. All three cases were children between the ages of 2 and 10 years; all were hospitalized. The case from Cambodia died despite intensive medical care and was reported to have prepared sick chicken for food prior to becoming sick. The case from China remains in hospital in serious condition; his mother brought him to a wet market with live poultry and a live duck was purchased and slaughtered in the market. The case

from Egypt was discharged from the hospital; investigations into the source of infection indicate the case had exposure to backyard poultry. *WHO Avian influenza situation updates*

**FluWatch reports include data and information from the following sources:** laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

**ILI definition for the 2011-2012 season**

**ILI in the general population:** Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

**Definitions of ILI/Influenza outbreaks for the 2011-2012 season**

**Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

**Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

**Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

**Influenza Activity Levels Definition for the 2011-2012 season**

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

*We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.*

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 998-8862.